

Application No.: 10/623,958
Date of Response: 01/11/2005
Reply to Action of: 10/20/2004

LISTING OF CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An apparatus for polishing a substrate comprised of an
5 optical surface, wherein said optical surface has a centerline, said apparatus
is comprised of a polishing pad assembly comprised of a polishing pad, and
means for oscillating said polishing pad about said centerline such that said
oscillations occur within 1.5 mm of said centerline at a frequency of from
about 0.25 KHz to about 50 KHz, while simultaneously contacting said pad
10 with at least 90 percent of said optical surface.
2. (Withdrawn) The apparatus as recited in claim 1, wherein said means for
oscillating said polishing pad is comprised of means for moving said polishing
pad in a non-linear motion.
3. (Withdrawn) The apparatus as recited in claim 2, further comprising moving
15 said optical surface.
4. (Withdrawn) The apparatus as recited in claim 1, wherein said polishing pad
assembly is comprised of a backing disposed within a tool body, wherein said
tool body is comprised of a surface that is substantially congruent with said
optical surface.
- 20 5. (Original) The apparatus as recited in claim 1, wherein said means for
oscillating said polishing pad is comprised of means for moving said polishing
pad in a linear motion.
6. (Withdrawn) The apparatus as recited in claim 1, further comprising means
for rotating said polishing pad.
- 25 7. (Withdrawn) The apparatus as recited in claim 1, further comprising means
for contacting said polishing pad with said optical surface, for maintaining a
uniform pressure on said optical surface and across said optical surface, and
for varying the amount of pressure applied by said polishing pad to said
optical surface.

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8. (Withdrawn) The apparatus as recited in claim 1, further comprising means for holding said substrate and allowing said substrate to rotate when it is contacted with said polishing pad.
9. (Withdrawn) The apparatus as recited in claim 1, further comprising means for holding said substrate and preventing said substrate from rotating when it is contacted with said polishing pad.
10. (Withdrawn) The apparatus as recited in claim 1, wherein said polishing pad is comprised of a bottom surface, and wherein said bottom surface is comprised of a multiplicity of recesses.
11. (Currently Amended) An apparatus for polishing a portion of an optical surface, wherein said optical surface has a centerline, said apparatus is comprised of a polishing pad comprised of a surface that has a surface area that is less than about 0.15 times as great as the surface area of said optical surface, and means for oscillating said polishing pad about said centerline such that said oscillations occur within 1.5 mm of said centerline at a frequency of from about 0.25 to about 50 KHz.
12. (Withdrawn) The apparatus as recited in claim 11, further comprising a fixture for holding said polishing pad to said optical surface and for providing uniform pressure to said polishing surface.
13. (Withdrawn) The apparatus as recited in claim 12, further comprising means for varying the amount of said uniform pressure applied to said polishing surface.
14. (Original) The apparatus as recited in claim 11, comprising means of oscillating said polishing pad in a linear motion.
15. (Withdrawn) The apparatus as recited in claim 11, comprising means for oscillating pad in a non-linear motion.
16. (Withdrawn) The apparatus as recited in claim 11, further comprising means for rotating said optical surface while it is contiguous with said polishing pad.
17. (Withdrawn) The apparatus as recited in claim 11, further comprising means for holding said optical surface in a substantial tangential relationship with regard to said polishing pad.

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18. (Withdrawn) The apparatus as recited in claim 11, further comprising means for subjecting said polishing pad to ultrasonic energy.
19. (Withdrawn) The apparatus as recited in claim 1, comprised of means for oscillating said polishing pad at a frequency of a least 250 hertz.
- 5 20. (Withdrawn) The apparatus as recited in claim 11, comprised of means for oscillating said polishing pad at a frequency of at least 250 hertz.